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**Savings Behavior
in the Developing World.
Evidence from
Northern Ethiopia**

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Savings Behavior in the Developing World

Evidence from Northern Ethiopia



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Table of Contents

List of Abbreviations and Glossary of Key Terms	iii
Acknowledgements.....	iv
1. Saving in Developing Countries – Introductory Remarks	1
2. Case – Ethiopia	4
2.1 General Information	4
2.2 MFIs and Microfinance Regulation.....	5
2.3 Research Area.....	6
2.4 Sample Selection	7
3. Saving in Developing Countries – a Theoretical Perspective	8
3.1 Neglect of Savings	8
3.2 Why People Save	11
3.3 Ways to Save	12
3.4 Importance of Saving.....	13
3.4.1 Importance for the Poor.....	13
3.4.2 Importance for the Microfinance Sector.....	14
3.4.3 Importance for the Economy	15
3.5 Formal and Informal Financial Institutions	16
3.6 The Poor's Preferences Concerning Saving	17
3.7 More Recent Empirical Research.....	19
3.8 How the Poor Save.....	20
3.8.1 Informal Savings Tools	21
3.8.2 Formal Institutions.....	25
3.8.3 Loans	26
4. Savings Behavior in Northern Ethiopia	26
4.1 Use of Savings	26
4.2 Reasons for Saving.....	27
4.3 Barriers to Saving	29
4.4 Savings Tools	29
4.5 Determinants of Saving	33
5. Implications and Concluding Remarks.....	42
Bibliography.....	45
Appendices.....	49
Appendix A: Research Area.....	49
Appendix B: Sample selection.....	51
Appendix C: Variable Descriptions	54
Eigenständigkeitserklärung	58
Dataset, Do-Files and Questionnaire (CD).....	59

List of Abbreviations and Glossary of Key Terms

ACSI	Amhara Credit and Savings Institution
ASCA	Accumulating Savings and Credit Association
BRI	Bank Rakyat Indonesia
CGAP	The World Bank's Consultative Group to Assist the Poor
DECSI	Dedebit Credit and Savings Institution
Edir	A savings group of the ASCA-type that functions as an informal insurance against the high costs of life-cycle needs such as funerals, weddings or baptisms
Equb	A savings group of the ROSCA-type
GDP	Gross Domestic Product
HDI	Human Development Index
IPA	Innovations for Poverty Action; American research NGO
MFI	Microfinance Institution
NGO	Non-governmental Organization
PPI	Progress out of Poverty Index® by the Grameen Foundation: tool to measure socioeconomic status
PPP	Purchasing Power Parity
PSNP	Productive Safety Net Program: Food aid program implemented by the Ethiopian government, USAID and other donors to assure food security. Recipients do environmental work in return for the food.
ROSCA	Rotating Savings and Credit Association
Tabia	Administrative entity in Ethiopia. One entity below Woredas.
UNDP	United Nations Development Programme
VSLA	Village Saving and Lending Association
Woreda	Administrative entity in Ethiopia, comparable to counties. One entity below the regional level.

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1. Saving in Developing Countries – Introductory Remarks

The insight that the poor in developing countries are capable of saving money is fairly young. In fact, the widely known term *microcredit* reflects the former narrow view on financial inclusion for the poor. Only in recent years has there been a semantic shift from *microcredit* to *microfinance* that takes into account the fact that credit alone does not lift the poor out of poverty – and that *microcredit* is not the silver bullet it was made out to be.

The general neglect of saving by bankers, governments and donors means that the poor rarely save in banks, but in often ingenious informal ways, outside of the recorded cash economy. These informal ways to save, may they be at home or in a savings group among friends, neighbors and relatives, have only very recently received attention. Consequently, there is little data on the saving behavior of the poor in developing countries.

To fill this knowledge gap, the American research NGO *Innovations for Poverty Action (IPA)* is currently collecting data on informal savings practices in eleven countries of the developing world.¹ With better information on these practices, saving in developing countries will not only be better understood, but can also be improved by providing formal savings products, such as savings accounts with a bank, that cater to the specific needs of the poor. Making saving cheaper, more accessible to, and more secure for the poor will not only benefit them greatly, but also has far-reaching effects on the aggregate economy by facilitating economic development and increasing general welfare. For the sake of this paper, savings will be defined simply as keeping money aside for later consumption.

During the summer 2012, I had the opportunity to assist IPA with this endeavor. 85 quantitative interviews from the northern Ethiopian region of Tigray are analyzed in this paper, all of which were conducted by myself. This unique circumstance has given me the opportunity to gain valuable firsthand insight

¹ More information on the project at <http://www.poverty-action.org/project/0533>

into the saving practices in the research area. It has allowed me to follow this project from data collection to data analysis and to be the first to produce output.

The respondents interviewed live in a drought-prone region of Ethiopia and are some of the poorest of the poor. A majority of the respondents depend on food aid by international donors and the government.

This study will attempt two things. First, it will present a general review of the academic literature on the savings behavior among the poor in developing countries, on the savings tools used by the poor, and on the implications of saving on the life in developing countries. This discussion aims to shed light on this oft-ignored issue and show the importance of saving in the developing world. Second, the saving habits in the research area will be closely analyzed. Given the small sample size, the study will be of a more explorative and descriptive nature, rather than of an analytical one. The statistical analyses presented here are nonetheless insightful.

To achieve these goals, the study proceeds as follows. Firstly, the research area in northern Ethiopia will be presented and its challenges in terms of saving discussed. Secondly, the academic literature on saving in developing countries will be reviewed. This section will explore the general neglect of savings in the developing world until recently, the theoretical background of saving in developing countries, and the implications of savings for the poor, for microfinance institutions (MFIs) and for the economy. Furthermore, the paper will shed light on the preferences of the poor when it comes to savings and discuss the advantages of formal over informal savings. This section concludes by presenting various existing savings mechanisms among the poor. Subsequently, in the empirical part of the study, the savings habits and the determinants for saving in northern Ethiopia will be described and analyzed. First, this section will discuss reasons for savings, the barriers to savings and the different savings tools in use in the research area. Lastly, the study will analyze the socioeconomic determinants for the decision to save, the amount saved and the decision to save with a formal institution. The hypotheses tested in this part were deducted from current debates in the literature:

- H₁: Higher socioeconomic status and larger income increase not only the likelihood to save, but also the amounts saved.
- H₂: Women are better savers than men, such that they save more often and larger amounts.
- H₃: A household with many income earners is more likely to save and saves larger amounts than a household with many unemployed members.
- H₄: Education increases the likelihood to save, the amounts saved and the use of formal savings tools.
- H₅: People living in urban areas are more likely to save and save larger amounts than people in rural areas.
- H₆: The use of more formal saving mechanisms increases the amounts saved.

The analyses will show that the majority of respondents save, however tiny the sums. This demonstrates that even the poor are not “too poor to save,” as many had at first believed. Most respondents save using informal devices such as in-kind savings. The data suggests that most of these savings function as security cushions for unexpected shocks. Both socioeconomic status and income turn out to be important determinants for saving. Women are more likely to save than men, but they do not necessarily save more. Counterintuitively, more income earners in a household *reduce* the amounts saved. Education is both important for the decision to save and the amounts saved. Furthermore, literacy significantly determines the use of formal financial devices. The analyses will demonstrate that urban inhabitants save significantly less than people living in rural areas. Lastly, the study will show that the use of formal tools does not impact the amounts saved, which carries important implications for the work of governments, development practitioners, and donors.

2. Case – Ethiopia

2.1 General Information

Ethiopia is one of the least developed countries in the world. With a GDP per capita of \$848 (2005 PPP), it ranks 174 out of 187 nations. ("GDP per capita (2005 PPP \$)," 2011). The United Nations Development Programme (UNDP) reports that 39% of approximately 84 million Ethiopians live below the poverty line of \$1.25 PPP per day. ("Ethiopia: Country Profile: Human Development Indicators," 2012). In the current Human Development Index (HDI), which takes into account measures of income, life expectancy and education, Ethiopia places 174 of 187 ranked nations ("Human Development Index," 2011). 76.8% of the population lives in rural areas where it is dependent on subsistence agriculture (Kassa, 2010, p. 8). Troublesome for the Ethiopian economy – and very much so for private and national savings – is the persistently high inflation rate. In 2011 consumer prices increased by 33,2% ("Inflation, consumer prices (annual %)," 2012).

Given Ethiopia's underdevelopment, its repeated humanitarian crises, as well as its importance as a relatively stable state among the crisis-prone horn of Africa, Ethiopia is the biggest aid recipient in Africa (2012). Since Ethiopia is landlocked, with neighboring Somalia's instability to the East and the closed border between Ethiopia and Eritrea to the North, Ethiopia is forced to use the port of Djibouti at very high costs. This causes Ethiopia to be somewhat isolated from international trade.

With various dictatorial regimes, recurring famines and civil and international wars, the country has experienced an unstable past. Only since the end of the Eritrean-Ethiopian War in May 2000, has Ethiopia been able to experience a period of relative stability. Since then, the country has shown average GDP growth of 11.2% between 2003/4 and 2008/9 (Ncube, Lufumpa, & Ndikumana, 2010), raising hopes for politicians, citizens and development practitioners. The recent death of long-time leader Meles Zenawi has sparked concern about the country's stability, although there have not been any noteworthy negative effects so far. Zenawi had not only been a symbol of independence in Ethiopia but had

also introduced progressive policies and opened the country to the international community.

2.2 MFIs and Microfinance Regulation

Microfinance institutions (MFIs) in Ethiopia are governed by the “proclamation of licensing and supervision of microfinance institutions” introduced by the Ethiopian government in 1996 and revised in 2009 (Kassa, 2010, p. 10). Consequently, microfinance institutions (MFIs) are legally able to operate under the supervision of the National Bank of Ethiopia. Microfinance in Ethiopia is defined “as the provision of a wide range of financial services to the low income people and micro and small enterprises that usually lack access to formal financial institutions ([such as] banks).” (p. 35) According to Ethiopian legislation, financial institutions are divided into formal, semi-formal and informal institutions. Formal financial institutions comprise twelve banks, one development bank, twelve insurance companies and thirty MFIs (p. 28). Semi-formal institutions include savings and credit cooperatives, but are scarce and were hardly encountered during this study. Informal institutions include all financial organizations that are not supervised by the government. The two largest MFIs in Ethiopia by borrowers are the Amhara Credit and Savings Institution (ACSI) and the Dedebeit Credit and Savings Institution (DECSI) (p. 32). DECSI – which is mainly active in Tigray and the only MFI assessed in this study – and ACSI have a market share of 65% in Ethiopia (Kereta, 2007, p. 15). These MFIs also happen to be among the largest in Africa, as they serve the most clients on the entire continent (Lafourcade, Isern, Mwangi, & Brown, 2005, p. 5). With respect to the number of savers, DECSI is the seventh largest MFI in Africa (p. 19). The total savings in Ethiopian MFIs amount to \$178 million (Kassa, 2010, p. 29). Even though the 30 MFIs in Ethiopia reach about 2.3 million clients, only 10-15% of demand for financial products is met (p. 10).

Generally, savings in Ethiopia tend to be quite low. In 2010, Ethiopia had gross domestic savings of only 0.4% of GDP. In 2011 this figure rose to 1.8%. These are startlingly low figures compared to the world’s average of around 19%. Even in

comparison to Ethiopia's neighbors it is low. Sudan and Kenya saved 29.9% and 6.2% of their GDP respectively ("Gross Domestic Savings," 2012). This might also be because many savings in Ethiopia are kept not in formal institutions and are therefore not recorded by official sources (Davison, 2010).

In the face of these issues, the Ethiopian government has adopted policies to encourage saving and the use of MFIs. The initial capital requirement for establishing an MFI in Ethiopia is the lowest in the world at \$23,000 (for comparison: Uganda requires creators of MFIs to have initial capital of \$250,000). In an effort to boost savings and growth the central bank has furthermore raised the minimum interest rate for deposits from 4 to 5% (Davison, 2010).

2.3 Research Area²

The research for this study was conducted in Tigray, the northern most region of Ethiopia. According to the last census, it has about 4.3 million inhabitants ("About Tigray," 2012). Agriculture is the main sector of the regional economy accounting for almost 50% of the GDP (*Ibid.*). Tigray is divided into various Woredas (comparable to counties), one of which is Kilte Awaleo, this study's project area. Kilte Awaleo was selected by the implementing partners at the Consultative Group to Assist the Poor of the World Bank (CGAP). Its location along the main road from the capital, Addis Ababa towards the Eritrean border, the only paved road in the district, allows it to somewhat integrate into the national economy. The parts along the main road are easily accessible, including Wukro town, the only city in the county. The rest of the area is rural, often difficult to reach and during the rainy season sometimes only accessible by foot. The region therefore offers a mix of accessible rural and urban areas on the one hand and inaccessible rural parts on the other.

Kilte Awaleo comprises of eighteen subdivisions, so-called Tabias. Wukro, the provincial capital, is treated as a separate administrative entity. Kilte Awaleo

² More information on the research area is available in Appendix A

has a total population of 116,865, living in 27,049 households. The district is in a drought-prone area, where food shortages are common. In fact, only 26.84% of households in the region are capable of independently sustaining themselves. The remaining 73.2% of households are dependent on the Productive Safety Net Program (PSNP), a program designed to feed a household in the avragely six month long period, in which they have difficulty caring for themselves. Of the 18 Tabias in the district, only one is a town of 5,437 inhabitants. (Source: Kilite Awaleo Woreda Administration)

2.4 Sample Selection

During the course of this study, the interviews sought to obtain information about the entire household and were therefore usually conducted with the most knowledgeable member of the household, the household head. The limitations that arise by speaking with only one member of a household include the underreporting of savings, since not all savings may be aware to that particular respondent. In fact, it is quite likely that some members of the household hide savings from the head in order to protect them.

There was no complete household list for the research area, which is why multistage sampling had to be employed.³ First, eight of the eighteen Tabias in the area were randomly selected. In a second step, two Kushets (subdivisions within each Tabia) were randomly drawn. Kushets are the smallest administrative entity. A Tabia has 3.6 Kushets on averages. Within each of these Kushets, a complete household list was available and were used to draw a random sample of households. Wukro Town was included in the sample because it is the only substantial urban agglomeration in the area. It is divided into so-called Kebelles, of which two were randomly chosen, according to the selection process used for Kushets. The Kebelle administration provided complete household lists, which were used to randomly select the households to be interviewed.

³ More detailed information on the sample selection is available in Appendix B.

Using this methodology, 85 households were selected and interviewed. The sample featured 61 male-headed households and 24 female-headed households.

With regards to the small sample size, the quantitative results of this study should be handled with care. It should be kept in mind that no inferences for the Ethiopian region of Tigray or Ethiopia as a whole can be made. Hence the rather explorative and descriptive nature of this study.

3. Saving in Developing Countries – a Theoretical Perspective

3.1 Neglect of Savings

As early as 1984, Robert C. Vogel referred to saving as “The Forgotten Half of Rural Finance” (Vogel, 1984). Yet, still today development researchers and practitioners, heads of MFIs, and the general informed public are only slowly recognizing the vital role savings play in poverty alleviation and financial inclusion.

Most MFIs, especially in the earlier stages of the so-called “Microfinance Revolution” (see for example Robinson, 2001) focused their efforts exclusively on credit, believing that *credit-constraints* are one of the main factors keeping people trapped in poverty. The most famous example of this attitude is the first model of the Grameen Bank in Bangladesh. Like the Grameen Bank, many MFIs liked to think of their clients as “microentrepreneurs” who simply lack the necessary access to cheap capital in order to create or expand their businesses. Savings products were only offered in combination with credits as a mandatory device, which could be used by the bank in case a borrower defaulted (Beatriz & Jonathan, 2005, p. 149). Bankers and economists sought to support this policy with various arguments. Firstly and most simply, they claimed that the poor are “too poor to save.” Furthermore, they argued that handling the savings of small depositors is too costly for banks. For instance, Schmidt and Zeitinger (1994) state that “the mobilization of small-scale savings is so expensive that one must ask why an intermediary [...] should be expected to deliver this additional range of services which are costly and extremely difficult to provide” (in Robinson,

2001, p. 251f). The third argument proposed by banks and economists maintained that there are sufficient informal savings tools accessible to the poor, and consequently no demand for formal accounts (Robinson, 2001, p. 228f).

However, all three of these arguments have been proven otherwise. Firstly, empirical evidence shows that the poor *do* save and do so regularly (see for example Collins, 2005; Karlan, Fischer, & Nadel, 2011; Rutherford, 1999a, 1999b). Stuart Rutherford – one of the first to do research in this area – notes, the poor are “too poor to be able to save much; too poor to do without saving” (1999b, p. 7). One reason for which this was not apparent to researchers, bankers, and development practitioners is that the poor hardly ever save in formal financial mechanisms such as banks. This is mainly due to the fact that such tools were (and still are) inaccessible to the poor, as they are usually found in urban agglomerations and hardly ever cater to the poor (Rutherford, 1999a, p. vii). Instead, the poor have to resort to informal devices, such as savings groups, savings at home or social networks.

Secondly, even though it is true that small and frequent deposits are costlier for banks than larger ones, recent empirical evidence shows that taking deposits from small savers can be a profitable endeavor for MFIs and, more importantly, a step away from dependence on donor money towards financial sustainability and profitability for MFIs (see for example Westley & Palomas, 2010).

The third argument proposes that an abundance of informal tools makes formal savings products unnecessary. Although this demonstrates a vague knowledge of savings and the poor, it overlooks the fact that informal savings tools, like savings at home, are often very unprotected from risks. Moreover, the argument has an inherent logical problem. Credit constraints exist when people do not have the necessary access to a lump sum of money in order to invest in a business. If, however, there were enough convenient, efficient, and secure savings tools available to the poor, they could simply “save their way out of credit constraints” (Beatriz & Jonathan, 2005, p. 161).

Accordingly, Banerjee and Duflo (2006) point out that “the reason why many of the poor respond so well to micro-credit, is not necessarily because it offers them credit, but because once you take a loan and buy something with it, you

have a disciplined way to save – namely, by paying down the loan" (p. 15). Likewise, in order to understand credit constraints one must also acknowledge the existence of savings constraints. In short, "the two are complementary" (Beatriz & Jonathan, 2005, p. 172). Thus, it is rather surprising that "savings constraints do not have a prominent place in academic explanations of why poor people stay poor" (p. 159).

The assessment that there is a wide variety of informal savings mechanisms available to the poor is true (see for example Rutherford, 1999a; 1999b), but it has become clear that "informal finance by itself is unable to meet all the savings needs of the poor" (Karlan et al., 2011, p. 2). A study conducted by FinScope in Uganda found that – despite the various informal and formal mechanisms available – 43% of respondents named a savings account as their greatest financial need, compared to 31% who mentioned credit (Kendall, 2010, p. 1). Expanding, yet still very limited knowledge on savings in developing countries and pioneering work by institutions like *SafeSave* and *MicroSave* has led to an increasing realization that savings are important for broader financial inclusion. This is reflected in the semantic shift from *microcredit* to *microfinance* in the last ten to fifteen years (Beatriz & Jonathan, 2005, p. 147) and has prompted MFIs all over the world to introduce *voluntary* savings products (as opposed to the above-mentioned *mandatory* ones). Though many of these products are still being tested and have not perfectly adapted to market conditions in the developing world, the demand for voluntary savings accounts has been overwhelming. With a savings product designed to cater to the specific needs of the poor, Bank Rakyat Indonesia (BRI) has been able to amass deposits of \$3 billion across 16.1 million accounts in only 13 years from 1983 to 1996, mainly from small savers (Robinson, 2001, p. 228f). Equity Bank from Kenya has seen the value of its deposits increase ten-fold over the five years between 2005 and 2010 to \$1.2 billion in 5 million accounts (Radcliffe, 2010, p. 1). It is obvious that contrary to the general belief, there is a great demand for savings products in developing countries, but this demand is not met. Of 166 MFIs around the world surveyed in 2009, only 27% offered savings products ("Savings and the poor: A better mattress," 2010). It is therefore not surprising that still a vast majority of inhabitants of low- and/or middle-income countries do not have an account in a

formal financial institution. Kendall (2010) reports that “90% of the 2.5 billion people living on less than \$2/day in the developing world do not have an account” (p. 1). Rani Dashpande (2006) notes that in some areas of the developing world, only 6% of the population has access to a formal account (p. 1).

3.2 Why People Save

In the developed world, saving has long been subject of considerations among economic scholars. Most researchers “agree that income and/or wealth is the main driving force behind consumption and thus saving” (Wright, 1999, p. 2). What most disagree on is the *type* of income which drives saving.

Keynes' classical Absolute Income Hypothesis simply states that with increasing income, households will save more (p. 2). Empirically this is also confirmed in developing countries. Arrestoff et al. (2009) find that in Morocco “income is an important determinant for household savings” (p. 11).

Milton Friedman's permanent-income hypothesis from the 1950s distinguishes between transitory and permanent income. Permanent income changes, according to Friedman, should be enjoyed in the form of consumption, whereas transitory changes should be saved and used to smooth consumption, i.e. maintaining a constant level of consumption despite irregular incomes (Beatriz & Jonathan, 2005, p. 155). Empirically this theory is difficult to test, since the poor often face irregular and volatile incomes, making it difficult to distinguish between the two types of income. Some of the theory's implications and hypotheses have been tested successfully in developing countries, but not conclusively (p. 167f).

Another prominent theory is Modigliani and Brumber's life-cycle income theory. It states that individuals and households should smooth consumption over the stages of their life-cycles. In its strongest form, the theory proposes that one should borrow to pay for education when young, save when earning in a job and “dissave” (i.e. consume) when retired (Beatriz & Jonathan, 2005, p. 151;

Wright, 1999, p. 2). The model works reasonably well in developed countries, but reaches its limits in developing countries. In many developing countries households do not consist of nuclear families, but are intergenerational. Due to constant changes in household demographics, it stands to reason that the average age of a household stays relatively constant. “It seems that rather than smoothing consumption by borrowing and saving, the household smoothes its income by rebundling” (Beatriz & Jonathan, 2005, p. 152).

The explanatory power of these models in developing countries is ambiguous. It seems logical that income is an important determinant for saving. But it is a misconception that the poor’s savings only depend on income. They do have the choice to save or not to save even with little incomes (Esther Duflo in Schwarzenbach, 2012).

3.3 Ways to Save

Rutherford (1999b) identifies three archetypical ways of saving: *saving up*, *saving down* and *saving through*. In *saving up* devices, money is accumulated in a safe place, until they have grown into a usable lump sum. *Saving down* is just the opposite. The lump sum is first obtained as an “*advance [sic]* against future savings” (p. 8). The repayments then take the place of savings. This realization, namely that loans can be considered a way to save further questions the microfinance industry’s focus on credits and its neglect of savings until recent years. *Saving through* devices feature regular payments, but the lump sum is obtained not at a previously agreed upon time, but rather when it is needed, which can occur at any point during a cycle. This is the case in insurance schemes and other devices such as Rotating Savings and Credit Associations (ROSCAs), which will be explained further on.

3.4 Importance of Saving

3.4.1 Importance for the Poor

To better understand the savings habits of the poor, knowledge of the developing countries themselves is necessary, rather than attempting to transfer findings from developed countries.

The incomes of the poor are often volatile and irregular, especially in rural, agricultural sectors (e.g. Arestoff et al., 2009; Geda, Shimeles, & Zerfu, 2006). The poor therefore have an increased interest in smoothing their consumption patterns (see for example Robinson, 2001). The need to smooth consumption is usually met by short-term, highly liquid, convenient and accessible savings mechanisms, such as money kept at home. However, there are also many occasions in which the poor need large lump sums of money. Rutherford (1999a, 1999b) identifies three types of such events: life-cycle needs, emergencies, and opportunities. Life-cycle needs include events such as weddings, funerals, childbirth, education and so forth. Emergencies, such as health shocks, floods or droughts are especially important considering the lack of social security systems and insurance institutions in developing countries. Lastly, opportunities, such as the option to cheaply purchase productive assets or invest in a business may well arise unexpectedly and necessitate quick access to lump sums. Accordingly, Rutherford defines financial services for the poor as “services that help the poor *turn savings into lump sums [sic]*” (1999b). Robinson (2001) expands the list by adding the necessity to build up assets as collateral. Drawing on work by Hernando de Soto, Robinson argues that often the poor possess capital or assets, such as land, but lack legal title to their possessions. This type of capital is referred to as *dead capital* since it cannot be used as collateral for a loan. Therefore, the only way by which the poor can acquire *live capital* (capital that *can* be used as collateral) is to obtain lump sums of money (p. 233f). To acquire these lump sums households can sell assets, mortgage assets, or save. The first two ways require assets to begin with (and in particular, assets that can be mortgaged) and carry the disadvantage of losing these assets. Therefore, “the

only reliable and sustainable way open to the poor is to *build them* [lump sums] *from their savings [sic]*" (Rutherford, 1999b, p. 7).

3.4.2 Importance for the Microfinance Sector

"Many banks claim that it is impossible to profit on deposit accounts smaller than \$500, leaving many small savers to rely on informal mechanisms" (Beatriz & Jonathan, 2005, p. 164). However, as Kendall (2010) points out, the few banks that target the poor are often able to operate at lower costs than banks that do not (p. 5). Moreover, these MFIs tend to be more self-sustainable and less dependent on donor money.

One mechanism through which the bank can benefit from small savers is through the cross-sale of other products. When arguing that small savers are too expensive, it is often assumed that these savers would only save and not purchase any other financial products from the Bank or MFI. However, microfinance clients tend to save and borrow at the same time. In fact, small savers usually are not small borrowers, but often borrow larger sums which are profitable for MFIs (Westley & Palomas, 2010, p. 4). In a study of two MFIs, ADOPEM in the Dominican Republic and Centenary Bank in Uganda, Westley and Palomas (2010) find that although small savers tend to create high annual operating costs of 59 – 241 % of their deposit balance, "these high operating costs are more than overcome by the profits generated through cross-sales of loans and other products to small savers and by the fee income derived from their savings accounts" (p. 3). Taking this into account, the authors find small savers to be overall profitable for MFIs. Centenary's small savers generate profits of more than 400% of their balances. In ADOPEM, the profit margin is even higher at 1,000% of deposits (p. 3). The authors conclude that there is a "compelling business case for serving small savers" (p. 3).

3.4.3 Importance for the Economy

Literature on economic growth during the 1940s, '50s and '60s maintained that a lack of savings and, therefore a lack of capital, was among the most important development constraints. The argument held that a simple increase in capital, through an increased savings rate, for example, would start self-sustained economic growth. The early "Big Push" theory by Rosenstein-Rodan (1943) and, even more explicitly, the Harrod-Domar model (1947) reflect this assumption. However, the simplistic theory that an increase in national savings would spark economic development has been widely rejected (Snowdon & Vane, 2002, p. 319). Nevertheless, "while the precise relationship between savings and growth is still a subject of debate, for low-income countries financial development and 'deepening' are likely to have important implications for economic growth" (Carpenter & Jensen, 2002, p. 314). To a certain extent, development relies on investment, which is usually built on savings. Otherwise, money has to be borrowed at high costs (Pelrine & Kabatalya, 2005, p. 1; Robinson, 2001, p. 264f). Low private savings rates, like the ones currently observed in Ethiopia, are therefore cause for concern in any economy.

Empirical evidence further suggests that financial development is an important element of poverty reduction (Geda et al., 2006, p. 62). Beck et al. (2004), for example, find that the development of financial institutions is explicitly "pro-poor." They show that "financial intermediary development reduces income inequality by disproportionately boosting the income of the poor and therefore reduces poverty" (p.1). Due to a lack of capital, the poor are often forced to invest in less risky and therefore often less profitable endeavors, trapping them in self-perpetuating poverty. Higher savings and better access to lump sums of money help to overcome this dilemma. Because "low savings rates have the greatest negative impact on the rural poor," (Pelrine & Kabatalya, 2005, p. 1) it is often argued that financial inclusion is particularly important for poverty alleviation and therefore has additional positive long-term effects on the economy, such as improving equity (Robinson, 2001, p. 265).

3.5 Formal and Informal Financial Institutions

The question remains, however, whether the positive effects of larger savings are only present when the poor use formal institutions or whether informal mechanisms may also suite this purpose. General belief maintains that “financial development requires a transition from the informal to the formal [sector]” (Carpenter & Jensen, 2002, p. 315). The perception holds that people “graduate” from informal to formal institutions (p. 322). As Kendall points out: “there is plenty of anecdotal evidence that savings accounts have resulted in greater asset accumulation, better risk mitigation, and other benefits for poor households. But, how well do these individual anecdotes generalize?” (Kendall, 2010, p. 2)

What we observe is that “introducing formal financial institutions in a locality would appear to cause a shift away from informal consumption-smoothing mechanisms to the use of formal institutions” (Rosenzweig, 2001, p. 52). However, it is not clear whether microfinance intermediaries increase savings or just simply shift them from informal to formal mechanisms (Robinson, 2001, p. 265). Collins (2005) finds that “having a bank account does not determine whether households are able to spend more or less of their income” (Collins, 2005, p. 3), pointing to the conclusion that formal accounts do not increase savings. Dupas and Robinson (2009) find that the market women in their research area in Kenya were willing to take up a savings account with a de facto negative interest rate, suggesting “that the alternative savings opportunities that market women face offer an expected return even more negative” (p. 19). Furthermore, they find that these women used the money to increase their productive investment and their private expenditures, suggesting a positive effect of formal savings accounts. In their study, access to a savings account does not decrease savings in other tools (p. 13). They also find that ROSCA members are significantly more likely to take up a savings account, (p. 18) suggesting that “the accounts were perceived as having value over and above [...] ROSCA membership” (Kendall, 2010, p. 14). In a study conducted in the Philippines, Ashraf, Karlan and Yin (2006) find that offering a savings account with a commitment device increases formal savings by 82% (p. 669). Commitment

devices influence incentives in such ways that help people engage in behavior that is beneficial to them, but which they would have otherwise not pursued. They furthermore detect no evidence that this is due to a decrease in informal savings. A subsequent study by the same authors (2007) shows that the commitment savings products furthermore increased women's empowerment in the household (p. 11).

Kendall (2010) concludes, "the few rigorous studies that exist show positive impacts on savings behavior" (p. 17). Considering the poor's low level of income,

"the fact that great numbers of the poor save (and are even willing to pay for the opportunity to do so) is a profound statement given the tough choices they have to make in their day to day struggle to get by. Until we can develop a larger body of experimental evidence, this may be the best evidence we have that better savings services can improve the lives of the poor" (p. 17).

3.6 The Poor's Preferences Concerning Saving

Having established that well-designed formal savings accounts have a positive impact on savings, on the economy and on the welfare of clients, it is imperative to have "a clear idea of just what constitutes good services" (Rutherford, 1999a, p. lvi). It is therefore necessary to find out what the poor value most in savings services.

Many studies demonstrate that the most important feature of a savings account for the poor is its security (Deshpande, 2006; Karlan et al., 2011; Kendall, 2010; Moulick, 2008; Pelrine & Kabatanya, 2005; Wright, 1999). This is illustrated by the fact that many poor people are willing to pay substantial sums for a safe place to put their savings (see for example Robinson, 2001, p. 232; Rutherford, 1999a, p. xi). Rutherford (1999a) describes a deposit collector in a slum in the South-East of India who charges an annual interest rate (APR) of 30%. "In other words, the client is 'earning' interest at minus 30% APR" (p. xi). Almost as

important as security are proximity to and accessibility⁴ of the savings institution (Moulick, 2008, p. xi). Convenience is also important, (Moulick, 2008; Wright, 1999) and could explain the popularity of West African *susu* deposit collectors. A transaction with a *susu* collector takes up approximately 30 seconds of one's day, whereas a bank transaction takes between 15 and 30 minutes (Wright, 1999, p. 6).

Counterintuitively, high returns do not feature very prominent among preferences expressed by the poor (Beatriz & Jonathan, 2005; Moulick, 2008; Robinson, 2001; Wright, 1999). In fact, "the interest rate on deposits, it turns out, is most often a secondary concern" (Beatriz & Jonathan, 2005, p. 166). The negative interest rate mentioned above is exemplary for this phenomenon. It appears that "a safe place to store one's money is quite a valuable thing for poor households" (Kendall, 2010, p. 17). However, "where credible options are available, the poor are sensitive to interest rates" (Wright, 1999, p. 8). These findings make savings products even more attractive for MFIs, since they imply that they can finance their business through higher interest rates (Westley & Palomas, 2010, p. 5).

With regards to whether the poor prefer liquid savings (i.e. savings that can be liquidated any time) or illiquid ones (savings that are not easily liquidated) there is a lack of consensus among researchers. Whereas some scholars stress that liquidity is key to mobilizing savings, others believe that the poor display a strong preference for illiquidity. There are indicators for both. Many studies reveal, for example, that savers in MFIs care more about depositing and less about withdrawing money, indicating a preference for illiquidity (Pelrine & Kabatanya, 2005; Wright, 1999, p. v). Robinson (2001), however, reports that when Bank Rakyat Indonesia (BRI) conducted studies to efficiently design their savings products, "liquidity was found to be in high demand" (p. 232). Considering that the poor have various needs for savings that can be either short-term (such as urgent medical expenses) or long-term (e.g. life-cycle needs

⁴ Accessibility includes physical, psychological and financial factors. Physical accessibility refers to the proximity of the institution, its opening hours, and so on. Psychological accessibility refers to factors such as how the poor clients are treated by the bank staff and the complexity of the paper work. Financial accessibility comprises of opening, membership and withdrawal fees and minimum balance requirements.

like a funeral), it stands to reason that both a preference for liquidity and illiquidity may apply, depending on the purpose of saving.

This information has considerable implications for the design of efficient savings products for the poor. It shows that these products need to be safe, accessible, convenient, and after these conditions are met, yield high returns. Furthermore, savings accounts should include the ability to take loans and to be cheap (Moulick, 2008, p. 28; Pelrine & Kabatalya, 2005, p. 24). Formal financial institutions surpass informal ones in terms of security, but they still have trouble competing with informal institutions when it comes to accessibility.

3.7 More Recent Empirical Research

The above-mentioned preferences increase the attractiveness of formal savings tools to the poor. They are not, however, a guarantee for an increase in savings. More recent empirical evidence drawing on behavioral economics shows that one key to increase savings and eventually welfare is a commitment device. Brune et al. (2012) find that “offering commitment savings accounts to smallholder cash crop farmers in Malawi has substantial impacts on formal bank deposits and withdrawals [...], agricultural inputs applied [...], crop sales [...], and total household expenditures [...]” (Brune, Giné, Goldberg, & Yang, 2012, p. 23). The effects of an account without a commitment device are largely insignificant. Ashraf, Karlan and Yin (2006) find a significant increase in savings with a commitment device. Duflo, Kremer and Robinson (2009) are able to increase fertilizer usage in Kenya by 11% in year one and 16% in year two after the intervention by offering a commitment device. These commitment devices help savers overcome the prevalent urge to spend money on trivial expenditures, but also help them to keep the money away from claims by social peers. This points to the conclusion that even though the poor don’t necessarily *prefer* illiquidity, illiquidity helps them save and increase their welfare.

To solve the problem of accessibility of formal financial institutions, several innovative solutions have been proposed. Using already existing infrastructure,

like post offices or shops in order to deal with customers is one such solution. A very promising new solution is the inclusion of mobile phones. M-PESA, a mobile money transfer scheme developed in Kenya, allows financial transactions via mobile phones from virtually everywhere in the country. M-PESA reached 70% of Kenyan households in 2009 (Radcliffe, 2010, p. 1). In 2010, Equity Bank and M-PESA announced a joint venture, M-KESHO, which allows users to transfer money from their M-PESA accounts to a savings account in Equity Bank. The “initial uptake rate of M-KESHO has been faster than that of M-PESA” (p. 2). These innovative solutions in combination of a clear understanding of what constitutes good savings devices are promising steps towards the further financial inclusion of the poor.

3.8 How the Poor Save

The rather vague knowledge about the preferences of the poor concerning saving applies to very specific regions and is not easily transferred into new environments. As a result, in those regions about which there is little information, efficient savings accounts are most often not available to the poor. Rather they have to make do with whatever savings tools are available to them.

When it comes to the wide variety of mechanisms present in the developing world, most authors differentiate between formal and informal savings tools; others include a category of semi-formal mechanisms, usually referring to formal institutions, such as NGOs or some MFIs, that collect deposits without the rigorous control that banks undergo. To protect small savers, the Ethiopian government has been very careful when granting the right to institutions to collect deposits. All institutions that have this right are under supervision by the Ethiopian central bank and will therefore be considered as formal. This paper will only use the differentiation between formal and informal mechanisms, since it is the most applicable to this study. The only exception are cooperatives, which in a few cases provided loans. These loans will be considered as semi-formal loans.

3.8.1 Informal Savings Tools

Informal savings mechanisms take the lion's share of financial products used by the poor, and "developing countries show considerable similarity in the informal methods used by the poor for saving" (Robinson, 2001, p. 234).

3.8.1.1 Saving at home

One of the most common savings tools used by the poor is saving at home or somewhere about their person. Saving at home is a classical *saving up* device. The sums saved are usually small and serve short-term needs (Moulick, 2008, p. 9). Its advantages lie in its convenience and the liquidity of its savings, which allow the savers to react quickly to shocks or investment opportunities. However, social pressure on the money is high and saving at home tends to entail a problem of discipline (Moulick, p. 9; Rutherford, 1999a, p. vii). Furthermore, savings at home are subject to risks such as floods, fire, or theft. These kinds of savings do not only lack returns, but they also risk loss of value in case of high inflation rates, often observed in low-income countries (Karlan et al., 2011; Moulick, 2008; Robinson, 2001; Rutherford, 1999a, 1999b).

3.8.1.2 In-kind Savings

To escape social pressure and the risk of theft, poor people often invest their surplus in in-kind savings. These take various forms such as livestock, jewelry, land or crops. In-kind savings are a type of *saving up*, but, if well-managed, they can yield high returns and even contribute to income generating activities, for example as agricultural input. In case of an emergency, in-kind savings can be easily sold. However, in-kind savings are also subject to substantial risks and have their disadvantages. For instance, a disease might swipe away livestock or

the lack of property rights can endanger savings in land. In-kind savings are also prone to theft. Although in-kind savings are quite liquid on regular market days, some emergencies might require even faster liquidation. Furthermore, in-kind savings often cannot be used as collateral for loans. Despite all these considerations, however, in-kind savings are one of the most common savings mechanisms in the developing world (Moulick, 2008; Robinson, 2001). In-kind savings play also an important role in Ethiopia, although saving in land is impossible, since the acquisition of land is not permitted by law.

3.8.1.3 Savings Groups

"Savings clubs are made up of a group of people who save together (but not jointly) and thus monitor each other's savings discipline" (Karlan et al., 2011, p. 7). They can take the form of Rotating Savings and Credit Associations (ROSCA) and Accumulating Savings and Credit Associations (ASCA).

In a ROSCA, each member of a group contributes a fixed amount of money at a previously agreed interval. The lump sum that is accumulated is given to one member of the group at each interval, until every member has received the pot once and everybody has contributed the same amount of money. At the end of such a cycle, a new ROSCA is likely to start again. The ROSCA therefore combines saving with lending and can be considered as a *saving through* device.

There are various ways to determine how the pot is distributed among the members of the group. This can be by a lottery system, by assessing each member's need for the money, by a previously agreed upon order or by making bids for the pot. In addition to discipline, a further advantage of any ROSCA is that the money in the pot is out of reach of spouses, relatives or neighbors who would otherwise have a claim on the money. The money does not have to be stored and no middleman is involved. Participation in ROSCAs may also increase social standing and solidarity among its members. However, since ROSCAs follow a fixed schedule, people with irregular and volatile incomes might not be able to participate. Furthermore, in ROSCAs that are not determined by bidding or by

necessity, the money will not be received when needed, making it difficult to use ROSCAs as a mechanism to cope with shocks. In order to accumulate savings over a long period or for different needs, savers have to participate in more than one ROSCA and do so often (Rutherford, 1999a, p. xv). Even though participation in a ROSCA is generally free, ROSCA meetings are time-consuming and can therefore carry significant transaction costs. Furthermore, ROSCAs are primarily dependent on trust and will fail if one member abuses this trust. Nevertheless ROSCAs are generally well managed and reliable, mainly due to the fact that the social ties within the group help overcome information asymmetries and liability problems. As a result, the ROSCA is one of the most popular savings tools available to the poor. “There is evidence from many parts of the world that ROSCAs are enjoying a period of spectacular growth. Not only are they refusing to go away when formal financial services arrive, they are increasing in both number and complexity” (Rutherford, 1999a, p. xxvii).

In Ethiopia, ROSCAs are called *Equb*. Usually the person who gets the pot is determined by lottery. In northern Ethiopia, *Equbs* are a fairly recent development. According to Wolbert Smidt, Professor of Anthropology at the University of Mekele, they reached the rural areas only in the 1990s (personal communication, 6 August, 2012).

The functions of an Accumulating Savings and Credits Association (ASCA) are similar to a ROSCA, only that the pot is not distributed to one member at each meeting, but accumulates over time. If needed, members can borrow from the pot, paying an interest rate on the loan, which is then disbursed to the other members as returns. If members do not borrow from the ASCA, they use it as a *saving up* device. When borrowing, an ASCA can be considered a *saving through* device. ASCAs have the advantage of yielding returns on deposits, but are also more vulnerable to fraud. ASCAs can also take the form of informal insurance schemes, when they are built around a special purpose such as health expenses or life-cycle event such as a funeral. The Ethiopian ASCA, called *Edir*, is built around such special purposes and deviates from the standard ASCA such that Wright (1999) calls them an “ASCA-type emergency fund” (p. 11). *Edirs* usually serve for financing funerals, weddings or baptisms and can therefore be

regarded as a type of insurance against high costs connected to life-cycle events. Members contribute at fixed intervals and the money accumulates over time. In some *Edirs*, the money will be saved and a portion of it will be given to the person who needs it for life-cycle expenses. In others, the money is invested in materials that are necessary for the festivities that accompany these life-cycle events, such as cooking materials, tents, tables or chairs.

3.8.1.4 Deposit Collectors and Money Guards

Deposit collectors and money guards are individuals that store money for the saver and are classical *saving up* devices. Money guards might be friends, relatives, employers or any other trustworthy acquaintance and usually do not charge a fee. Deposit collectors on the other hand charge fees for their services. This type of savings is very prominent in West Africa, but are hardly found in East Africa (Rutherford, 1999b, p. 13f). This study did not come across any deposit collectors.

3.8.1.5 Reciprocal Lending

The bulk of financial transactions made by the poor are through reciprocal lending (Rutherford, 1999a, p. vii). These transactions are made within informal social networks, often existing over generations. They are based on *expectations* rather than strictly enforceable contracts and hardly ever feature fees or interest rates. Reciprocal lending is a *saving through* device and can be considered as a form of insurance. Non-obedience to these informal rules can come at dire costs. Informal social networks and reciprocal lending also pose a threat to savings and capital accumulation. A surplus might easily be “taxed” (Beatrix & Jonathan, 2005, p. 163) by the community.

3.8.2 Formal Institutions

What formal institutions like banks, insurance companies or MFIs have to offer and why they seem to be so attractive to the poor is their security (Moulick, 2008, p. 19). Formal institutions are monitored by the government or the central bank. Bank accounts are furthermore flexible and serve short-term as well as long-term needs (p. 18f).

However, banks also fail – in developing countries quite frequently (Deshpande, 2006, p. 8). Furthermore, banks cater mainly to an urban clientele and are scarce in rural areas. In addition to the geographical distance between the poor and banks, insurance companies and other formal institutions, there is also a socioeconomic barrier. Minimum balance requirements tend to be high, fees are often expensive and the poor often report to feel humiliated or uncomfortable in a bank (Moulick, 2008, p. 20). Moreover, just like any cash-savings, bank deposits do not ensure savers against the loss of their savings due to high inflation rates. Procedures and rules within banks tend to be complicated, making it harder for illiterate, poor people to join.

Microfinance institutions attempt to close the gap between informal schemes and banks. This means combining the advantages of formal savings tools such as security and flexibility and the advantages of informal finance such as convenience and accessibility.

However, MFIs only offer services to people who are still part of the economic circle. The “ultra poor”, those who have left the cash economy altogether, do not benefit from microfinance.⁵

Formal savings schemes (such as banks) do exist in northern Ethiopia, but face the same problems mentioned above. DECSI, called *Dedebit* among customers, does penetrate the rural areas, but does not reach all members of the rural poor yet. Apart from *Dedebit*, there are no other MFIs in northern Ethiopia. Medhin, a form of health insurance by the Ethiopian government, was recently introduced and is currently heavily marketed in the region.

⁵ Various asset transfer programs that are trying to include the ultra poor in this development and that make them eligible for microfinance are currently being tested and evaluated.

3.8.3 Loans

As explained above, loans can be considered as a savings tool. They follow the logic of saving: Regular payments accumulate to a lump sum of money. The difference lies in the order. The lump sum comes before the saving, which is why Rutherford calls loans an “*advance against future savings*” (Rutherford 1999b, 18) and defines them as *saving down* devices.

4. Savings Behavior in Northern Ethiopia

4.1 Use of Savings

Firstly – and arguably most importantly – it should be noted that the majority of respondents *do* save. 82.4% reported currently having money put aside for later consumption. Only 15 of 85 respondents reported that they have no current savings and have not saved in the year prior to the study. This is consistent with earlier studies on savings (see for example Collins, 2005; Karlan et al., 2011; Moulick, 2008; Pelrine & Kabatalya, 2005; Rutherford, 1999a, 1999b) and further refutes the oft-cited argument that offering savings to the poor is unnecessary since they cannot save anyway.

It should be kept in mind that 76.47% of the households in the sample are dependent on food aid and that they live close to the poverty line. Most of the respondents therefore save very small sums. Also it is important to note that in some cases people might be saving only because of the Ethiopian government’s strong policy to promote them (Davison, 2010). The government’s pro-savings policy and its implications became evident when one respondent told the interviewer about his savings account in the next town. Every week he would take the bus for 10 birr to deposit 9 birr in the account. When asked about the obvious paradox, he replied that the government advises him to save, so he does. Generally, however, it can be assumed that respondents consider savings to be important and useful, and make conscious efforts to save. “I know the

advantages of savings, I know that savings are useful, but we are always dependent on aid, so there is little to save," one respondent said.

Also noteworthy is the fact that savings are a sensitive issue and that respondents have incentives to conceal their savings, possibly leading to underreported savings. There is, however, generally no indicator for a general distrust towards the interviewer. Another reason, why savings might be underreported in this study is that many respondents did not consider the little money they had put aside as savings. One respondent said "I don't have a surplus that I could save." As it later turned out, he owned a health insurance policy and a savings box with 550 birr (about \$30), the fourth largest deposit at home in the sample.

4.2 Reasons for Saving

As shown above, important functions of savings are the smoothing of consumption and providing for the generally three situations in which the poor require lump sums of money: emergencies, life-cycle needs, and opportunities. Table 1 shows a list of intended uses for savings mentioned by respondents. These demonstrate a clear dominance of the need to cope with and prevent emergencies. According to the table, dealing with emergencies ranks as the highest intended use for savings. Three of the four most frequently mentioned reasons for saving – emergency or unexpected shock, health expenses, and security cushion – are directly linked to the necessity to cope with emergencies. Life-cycle needs only feature as fifth and sixth most often named reasons for savings (children's education, and wedding, funeral, holiday or birthday expenses). Opportunities appear only towards the end of the list, showing that mere survival is prioritized over the possibility to engage in new or invest further in income generating activities. The smoothing of consumption features relatively prominent as number three (regular life expenses or food purchases). One respondent named the intention to develop a savings habit, demonstrating the general awareness of the advantages and importance of savings. The use of savings in order to become independent of one's husband sheds an interesting

light on the importance of savings in intra-household relations and its implications for independence and the role of women in the society of the research area.

Table 1: Intended Uses of Savings Mentioned by Respondents

Intended Use of Savings	Number of Respondents who Mentioned Intention*
Emergency or an unexpected shock	39
Health expenses	28
Regular life expenses or food purchases	15
Security cushion	12
Children's education	12
Wedding, a funeral, a holiday or a birthday	7
To pay back a loan	6
To buy long term assets for agriculture or business (e.g. Livestock, machines, tools...)	5
To buy input for agriculture or business (e.g. supplies, fertilizer, seeds)	5
To purchase or build a house	2
To develop a savings habit	1
To pay for day laborers	1
To be independent of husband	1

*multiple answers possible

4.3 Barriers to Saving

Whereas respondents provide a variety of reasons for why they do save, non-savers are fairly homogenous in explaining why they do not. As table 2 demonstrates, all of the 15 non-savers in the sample said that their level of income is too low to allow for small surpluses. Some additionally mentioned that they have “too little money to save” or mentioned other reasons such as sickness or old age. These findings show that there is at least some truth in the original assessment that the poor are “too poor to save.”

Table 2: Barriers to Saving Mentioned by Respondents

Barriers to saving	Number of respondents who mentioned barrier *
Income level is too low to allow for small surpluses	15
Sickness	3
Too little money to save; deposits would be too small	1
Old age	1
Divorced and have to raise the children alone	1
“Have to repay my daughter’s loan”	1
Lack of income opportunities	1

*multiple answers were possible

4.4 Savings Tools

The average saver in the research area uses almost three different savings tools at once. The results show what Wright (1999) called “a startling diversity of

savings ‘accounts’” (p.15). This points to the conclusion that different savings tools suite different needs of the savers and that different savings schemes are used for different purposes, just like in developed countries. The findings can also be interpreted as an attempt to diversify risks.

Table 3.1: Savings Tools Used by Respondents

Savings Category	In-Kind	Formal Pension/Insurance Scheme	Informal Loan
Savings tool		Health Insurance “Medhin”	Pension
Percent of savers		59.42%	1.45%
Total			
Percent of savers	88.41%	60.87%	57.97%

The most commonly used savings tool in the research area is in-kind saving. Almost 90% of savers reported using this savings tool. The most common asset used is livestock, followed by jewelry and by constructing a house. As one farmer put it in an interview: “We farmers save in cattle, we know everything about it. A cow multiplies, produces milk and maybe gives birth to an oxen.” As farm animals, food producers, and an asset in case of emergency, livestock serves many purposes. However, most reported savings losses were from livestock, making it also the most risky savings tool in the sample.

The second most prominent savings tool is the government health insurance plan called *Medhin*. Around 60% of savers reported using this tool. At 137 birr a year (less than \$8) it is affordable for most people. *Medhin*’s high usage may be attributed to the fact that it is part of the government’s effort to increase savings.

Almost 60% of respondents had a loan from an informal source, such as a friend or a relative. This shows the important position that reciprocal lending within social networks takes in the research area. In fact, social networks are very powerful and very important in this area of Ethiopia and an important device for

savings and social security. According to Wolbert Smidt, in the rural society of northern Ethiopia “if there is anyone close to you who needs money, it’s absolutely impossible not to give” (personal communication, 6 August, 2012). This is confirmed by one of the respondents in the sample who went as far as saying: “We help each other. [...] If somebody doesn’t take interest in other people’s problems, they are not part of our society.” These kinds of transactions are not thoroughly recorded, but work on an informal basis. They are based on the simple truth pronounced by one respondent that “today you may be rich, tomorrow you may be poor. So you have to help.” According to Smidt, this is a society, “in which property is very relative. [...] It *is* individual property, but everybody else has some claim on it.” This of course is a major impediment to the accumulation of private savings. It should not come as a surprise therefore, that some savings products have been created to escape these societal obligations. An *Equb*, the ROSCA-type savings tool, is one of these. Due to their strict payment schedules, *Equbs* help to keep money away from whoever might otherwise have a claim on it. When asked about reciprocal aid and social networks, a somewhat disappointed respondent confided in the interviewer “nowadays, everybody has *Equb* so they don’t give. [...] Everybody is thinking about themselves.”

Table 3.2: Savings Tools Used by Respondents

Savings Category	Informal Savings Group	At Home	Formal Financial Insitution	Formal Loan
Savings tool	Edir (ASCA)	Equb (ROSCA)	MFI	Bank
Percent of savers	28,99%	15,94%	24,64%	7,25%
Total				
Percent of savers	44,93%	42,03%	31,88%	21,74%

Such savings groups are the fourth most common savings tool. Almost 45% of savers in the sample reported saving with one of these groups. *Edirs* (ASCAs) are

more common than *Equbs* (ROSCAs), which unlike *Edirs* are created with the sole purpose of saving. Although savings groups might figure less prominent in the research area than in other developing regions in the world, these numbers are still quite remarkable, considering that both types of groups are rather young phenomena in rural areas in Ethiopia.

About a third of respondents reported saving at home, most often in savings boxes. This figure should be regarded with some caution, since savings at home are the most vulnerable to bad intentions from outside, such as theft, and respondents therefore have an incentive to conceal savings of this kind. In one case, the wife of the household head told the interviewer that she hides money from her husband. Considering that most interviews were conducted with the household head, who was most often a man, it is quite possible that this type of saving was underreported, simply because the household head himself did not know. Because savings at home are so vulnerable to bad intentions, natural disasters and to the lack of discipline, many respondents expressed a clear repudiation towards this type of saving. One farmer told the interviewer: "If I keep my money in my home, I will be tempted to use it. It is better to have it far away." The commitment devices used in newer studies that attempt to increase household savings pick up on this attitude and, as mentioned above, are very successful doing so.

Formal financial institutions are still very uncommon in this rural part of Ethiopia. Less than a third of respondents reported saving in such types of institutions and less than one of the three savings tools used on average is formal. The most commonly used formal savings device is with the local MFI, *Dedebit*. Only five respondents were in possession of a bank account, three of which were inhabitants of a bigger town with arguably less transaction costs for saving in a bank. Some respondents showed clear apprehension towards formal savings devices. One said that he doesn't trust *Dedebit*. Another said: "If we take our money to the bank, we don't know. We can't be sure." Instead of the safe option of a bank or an MFI, most respondents opted for more salient and accessible, but less secure savings (namely in-kind). This phenomenon might be attributed to the observation in behavioral economics that people tend to

underestimate risks they know (like a dying cow) and overestimate risks they don't know (like a failing bank) (Levitt & Dubner, 2009, p. 150ff).

Formal loans feature less prominent than formal savings tools. Only about one fifth of savers reported having a loan. Generally, respondents preferred informal loans, which usually do not cost interest.

Table 3.3: Savings Tools Used by Respondents

Savings Category	Investment	Third Person	Formal Savings Group (VSLA)	Semi-formal loan
Total Percent of Savers	17,39%	5,8%	4,35%	2,9%

Twelve respondents, or about 17% of savers, reported saving through investments. Most of these investments were farmyard supplies, such as fertilizer and seeds. It should be noted that the interviews were conducted during the planting season, a period of the year in which this type of savings might be overestimated.

About 6% of savers entrusted a third person with their money and less than 5% of savers participated in a formally organized savings group, a Village Saving and Lending Association (VSLA). Only about 3% of savers had a semi-formal loan from a cooperative.

4.5 Determinants of Saving

What determines the likelihood to save and the amount saved is subject to debate in the literature. For the following statistical analysis of the socioeconomic determinants for savings a simple linear and a probit model similar to the ones used by Arrestoff et al. (2009) and Carpenter & Jensen (2002) will be employed. The probit model (table 4) was used to estimate the socioeconomic factors determining the decision to save in the first place. For this purpose a dummy with the attributes "respondent has savings"/"respondent

does not have savings" was created. To estimate the socioeconomic determinants for the amounts saved (table 5), an OLS regression was calculated, using the total value of household savings as dependent variable.⁶

H₁: Higher socioeconomic status and larger income increase not only the likelihood to save, but also the amounts saved

Not surprisingly socioeconomic status and income have an important effect on the decision and the capability to save. A higher score on the measure for socioeconomic status used in this study (the Progress out of Poverty Index (PPI) by the Grameen Foundation) significantly increases the likelihood to save (see table 4). It does not, however, have a significant effect on the *amount* saved (see table 5). The information in table 5 should be handled with care due to the limited number of observations.

Interestingly, a higher income has no statistically significant effect on the likelihood to have savings, showing again that the original assumption that the poor are "too poor to save" does not hold. It does, however positively impact the amount saved. The magnitude of the relationship is considerable. As R² at the bottom of table 5 indicates, the inclusion of income in the model, increases its explanatory power by almost 23%. Unfortunately, the data at hand does not allow for a more precise test of the different theories on how income affects savings behavior. In order to test Modigliani and Brumber's life-cycle income theory, a measure of the age of the household head would be necessary. Furthermore the data does not permit an assessment of the effects of income changes, let alone a distinction between temporary and permanent changes in income necessary to test Friedman's hypothesis on savings. Still it appears reasonable to say that income and socioeconomic status are important determinants for savings behavior. The proposed hypothesis can, however, not be completely confirmed. It seems that socioeconomic status is linked closer to the decision to save, whereas income helps explain the amounts saved.

⁶ More detailed information on the variables used can be found in Appendix C

Table 4: Probit Regression with Saving Dummy

	I	II	III
Log of Yearly Household Income Including Food Transfers	0.475 (0.286)		
Socioeconomic Status	0.0951** (0.016)	0.0918*** (0.008)	0.0717** (0.015)
Male Household head	-1.547* (0.055)	-0.951* (0.065)	-0.901* (0.066)
Size of Household	0.458** (0.025)	0.538*** (0.001)	0.535*** (0.001)
Ratio of Children in Household	1.995* (0.055)	1.332 (0.164)	
Urban	0.0958 (0.905)	0.328 (0.613)	
Schooling		0.944 (0.101)	1.179** (0.031)
Constant	-6.090* (0.073)	-3.232** (0.016)	-2.448** (0.040)
Observations	69	85	85

p-values in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Determinants for Total Household Savings

	I	II	III	IV
Log of Yearly Household Income Including Food Transfers	0.457* (0.052)	0.417* (0.075)		0.510** (0.018)
Socioeconomic Status	0.0286 (0.186)			
Male Household head	0.174 (0.646)	0.278 (0.461)	0.118 (0.804)	
Size of Household	0.0607 (0.526)	0.00216 (0.980)	0.105 (0.332)	
Ratio of Children in Household	0.990 (0.181)	0.717 (0.315)	0.0518 (0.956)	
Log of Ratio of Income Earners in Household	-0.967** (0.014)	-0.922** (0.020)	-0.862* (0.099)	-1.078*** (0.001)
Schooling	1.050*** (0.002)	1.139*** (0.001)	1.469*** (0.000)	1.164*** (0.000)
Urban	-2.973*** (0.000)	-3.249*** (0.000)	-1.524** (0.015)	-3.035*** (0.000)
Ratio of Formal Savings Tools in Portfolio	0.428 (0.450)	0.525 (0.357)	-0.408 (0.574)	0.368 (0.496)
Constant	1.680 (0.385)	2.898* (0.098)	6.317*** (0.000)	2.491 (0.130)
Observations	43	43	51	43
R ²	0.7527	0.7390	0.4969	0.7247

p-values in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

H₂: Women are better savers than men, such that they save more often and larger amounts

Generally, it is believed that women are better savers than men (e.g. Pelrine & Kabatalya, 2005, p. 6). Carpenter and Jensen (2002) confirm this claim. According to their study in Pakistan, “the number of female adults in the household [...] positively affects [...] savings behavior” (Carpenter & Jensen, 2002, p. 322). On the other hand, other studies find no confirmation for this hypothesis (see for example Arrestoff et al., 2009). Pelrine and Kabatalya (2005) even find indicators for the opposite (p. 21). With regards to this study, the hypothesis that women are better savers than men appears to be confirmed. More than 90% of female-headed households reported savings, whereas only 78% of male-headed households currently save. As the regression results presented in table 4 show, male-headed households are significantly less likely to have savings. This does not, however, give any insight on the question whether female-headed households save *more* than male-headed ones. In fact, as table 5 shows, the gender of the household head has no significant effect on the amount of total savings owned by the household, once the decision to save was made. The results therefore remain ambiguous. It seems that women are generally more aware of the advantages and the necessity of saving than men, but not more capable to accumulate substantial amounts of savings. Based on personal observations in the field, it would stand to reason that this might be due to the living conditions of female household heads in the research area. A woman becomes head of the household when she is either divorced or a widow. Usually she is responsible for raising the children after divorce. In most cases, women are not able to farm on their land (if they have land) and therefore are forced to have somebody else farm the land in return for only half of the harvest. Considering that in the area most *entire* plots of land are too small to sustain a family, this poses a serious threat to subsistence. This is merely speculation, however, and not confirmed in the data. Even when not controlling for socioeconomic status and income (Table 5, Model III), the gender of the household head stays statistically insignificant. It should not be forgotten that these results are based on a limited number of observations and might therefore be biased. Generally, the hypothesis cannot be entirely confirmed. What is

confirmed is that women are more likely to save than men, but not more likely to save *more*.

H₃: A household with many income earners saves more often and larger amounts than a household with many unemployed members

A further set of possible explanatory variables is the household composition. In a study from 1974, Snyder reports that “large and small households are equally likely to have positive saving” (p. 147). Arrestoff et al. (2009) find that in urban environments a larger household size negatively effects savings (p. 11). The findings in this study contradict both these studies. In fact, as table 4 shows, larger households are significantly more likely to save than smaller households. However, once controlling for the ratio of income earners in the household (an indicator between 0 and 1, calculated by dividing the number of income earners in the household by the household size), the size of the household has no significant effect on the amount saved by the household (table 5).

Interestingly, the ratio of income earners in the household has a counterintuitive effect on the amount saved. The larger the ratio of income earners in the household, the lower the amount saved. This also contradicts findings by Arrestoff et al. (2009) who find that an additional unemployed member of the household reduces savings (p. 11). A possible explanation for this phenomenon lies in the type of work most often engaged in. As explained above, the plots of land tend to be too small to feed a family for an entire year, leading to the large dependence on food aid in the research area. An additional member of the household working in the field will therefore not increase output, but leave it stagnant. One could argue that additional workers with occupations of this nature might actually entail costs for the household in form of additional food expenditures, trips to the doctor, and so forth. Equally important are opportunity costs that arise from not engaging in other, more profitable endeavors. The proposed hypothesis, therefore, has to be rejected.

The dependency ratio (the ratio of dependent children and seniors to the household size), although scantily tested, is interesting to consider. The effect of

an additional child or retired senior on savings could both positively and negatively impact saving. More dependent household members can either increase consumption and therefore lower savings or prompt a family to increases their savings, for example, for life-cycle events such as education, marriage or funerals. Early econometric studies find “the dependency ratio to have a significant, negative effect on saving” (Snyder, 1974, p. 148). The implications of this are interesting considering that high birthrates have already been identified as a barrier to economic development, for example through an increased pressure on scarce resources. If the findings by Snyder are confirmed, high birthrates will exhibit another impediment to development, namely through lowering savings. In table 5, the dependency ratio is approximated by the ratio of children under the age of 18 in the household. At first, an additional child has a positive effect on the amount saved. This could be explained by the desire to pay for a child’s education expenses or eventual wedding. However, when introducing the income earner ratio into the model, the dependency ratio loses significance. This ambiguous result might also be due to the indicator used. 18 years is not the most rigid cutting-off-point, considering that many Ethiopians start work well before they are adults and might therefore be actually contributing to household income. Furthermore there is no information on dependent seniors.

H₄: Education increases the likelihood to save, the amounts saved and the use of formal savings tools.

Education proves to play an important role in explaining savings behavior in the research area. Having received at least some schooling (represented by the variable “schooling”) significantly increases both the likelihood of saving in the first place and the amount saved.

Carpenter and Jensen (2002) also find a significant effect of education on savings. According to them, education, literacy and numeracy are significant for bank use, whereas only literacy is significant for ROSCA participation. This suggests that using a bank requires educational skills which are sparse in many developing countries. These results show “that sectoral barriers are in part due

to education" (p. 323). "Attempts to expand the formal financial sector could face severe constraints in countries with low educational attainment and literacy rates" (p. 316). As table 6 shows, education has important implications on the participation in formal savings tools in the research area. Similar to the study by Carpenter and Jensen, literacy is statistically significant. Their assessment that there might be sectoral barriers due to education can be sustained and the hypothesis can be confirmed.

Table 6: Determinants for the participation in formal savings tools

	I	
Literacy	0.452*	(0.054)
Schooling	-0.204	(0.404)
Log of Yearly Household Income Including Food Transfers	0.214**	(0.050)
Male Household head	-0.243	(0.202)
Socioeconomic Status	0.00872	(0.391)
Constant	-1.136	(0.255)
Observations	69	

p-values in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

H₅: People living in urban areas are more likely to save and save larger amounts than people in rural areas

Because people living in urban areas tend to have better access to savings devices, it is generally believed that urban inhabitants should be more likely to save. This study cannot confirm this claim. Living in an urban or rural environment has no statistically significant effect on the likelihood to save. It has, however, a strongly significant effect on the amount saved. In fact, urban inhabitants in the research area save significantly *less* than rural inhabitants. This seems counterintuitive, considering that urban inhabitants tend to have

more income opportunities and are better educated than rural inhabitants (64% of rural inhabitants in the sample have never gone to school, compared to 43% for inhabitants of an urban area), which as shown has a significant positive effect on the amounts saved. The reason for this phenomenon most likely lies in the nature of in-kind savings. Most in-kind savings recorded in the data are livestock, an asset that is valuable to rural inhabitants, not so to people living in a city, which gives the rural population an edge on the total amount saved over urban inhabitants. The rural inhabitants' disadvantage in in-kind savings is not compensated for, it seems, by any other type of saving. One might therefore conclude that urban inhabitants engage more in frivolous spending than the rural population.

H₆: The use of more formal saving mechanisms increases the amounts saved

There is still no confirmation that the use of formal tools increases savings, an important assumption behind the campaign for increased financial inclusion. If formal savings accounts do not have that effect, one might question the work currently done in this field.

As table 5 indicates, the ratio of formal savings tools in a respondent's portfolio has no significant effect on the total amount saved. This shows that the formal savings options available to the respondents in the research area have no effect on the financial decisions made in the household. Rather, from a financial perspective they are no better off choosing formal options over informal ones. One might even argue that the time and money spent on reaching the banks, MFI-branches or insurance companies might make them worse off. The only advantage that formal institutions have over informal ones, it seems, is their security. Considering that the poor generally value security in savings tools, this factor might have been the driving force behind those in the research area who chose to use formal tools over informal ones. Still, it is clear that the formal savings accounts available in the research area do not meet the specific needs of the inhabitants and offer them no advantage other than security. The proposed hypothesis can therefore not be confirmed.

5. Implications and Concluding Remarks

This study confirms recent empirical evidence and refutes old, but powerful clichés about the saving habits of the poor, by demonstrating that the poor in developing countries – and in this particular case, in Ethiopia – *do* save and do so using various savings tools. These findings further support the recently emerging understanding of financial inclusion as beyond simple access to credit. Rather, as the literature shows, saving is a cheaper, more convenient, and more sustainable way for the poor to build up lump sums, to smooth consumption and to acquire assets that can be used as collateral for a loan.

This paper demonstrates that *formal* savings products, although available in the region, are seldom used among the poor in northern Ethiopia. Despite the presence of the local MFI, *Dedebit*, in the area for almost 15 years, less than one quarter of respondents report having a savings account with the MFI. Instead, most respondents resort to informal savings mechanisms. This points to the conclusion that the formal savings mechanisms available in the area are not yet designed to cater to the specific needs of the poor.

Livestock is the most common savings tool in the sample, but also the most risky. Therefore, it appears that often the respondents trade their most valued feature of a savings tool, namely security, for the most familiar mechanism, savings in livestock.

In a region of the world where welfare and social security are scant, informal social networks provide the poor with some security on one hand, while acting as a barrier to saving on the other. More than 86% of respondents claimed that it was “common practice to give money to somebody who is in need.” Consequently, the accumulation of capital is very difficult among a community that may make claims over any collected sum of money. In fact, young urban inhabitants suffer particularly severely from the consequences, as they find that starting a business, which requires reinvesting savings in the enterprise, is hardly possible.

These social networks play an important role in the research area, because any

type of emergency or shock can pose substantial threat to a family. It is not surprising, therefore, that most respondents claim to save primarily for the purpose of preventing and coping with emergencies. Investments and possible income opportunities are a secondary concern.

Refuting the original assessment that the poor are “too poor to save,” this study finds that income has no significant effect on the decision to save. A broader measure for socioeconomic status, however, does. Once the decision to save is made, households with higher incomes are able to save more, confirming theoretical approaches to saving, such as Keynes’ Absolute Income Hypothesis.

Female heads of households in the research area appear to be generally more aware of the advantages of saving and, accordingly, are more likely to make the decision to save. They are not, however, able to save *more* than men. This is most likely due to the fact that women who are the decision maker in the household, face substantial challenges in their every day lives as they often have to care for an entire family alone.

Contrary to one’s intuition, additional income earners in a household *negatively* affect the household’s amount of savings. A possible explanation is the destitute state of the regional labor market. It seems that many workers do the work of only a few, not raising productivity and wasting additional workers.

Education is an important determinant for savings behavior as it significantly increases the likelihood to save and the amount saved. This further suggests that investments in education are among the most effective policies for developing countries as they carry many important implications, such as a more productive and healthy labor force and greater innovation. Literacy further proves to be a significant determinant for participation in formal savings tools, showing that there is an educational barrier to this type of saving.

According to the analyses, urban inhabitants tend to save less than the rural population. This might suggest that they are more likely to engage more in wasteful spending.

The findings of this paper also show that the formal savings tools offered in the research area do not significantly improve the amount saved by households. The

advantages of formal savings accounts observed in other countries therefore do not apply to the research area.

The literature reviewed in this study has demonstrated that financial inclusion and the provision of more suitable savings tools to the poor can carry significant positive effects not only on the poor themselves, but also on the economy and on the microfinance industry. This study has shown that the research area in northern Ethiopia is still at the initial stages of broad financial development, and improvements in terms of the provision of effective formal savings tools, education, women's empowerment, and the labor market still remain.

[85,850 Characters]

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Appendices

Appendix A: Research Area

Table A.1: General Information on the Research Area and the Selected Administrative Entities

District	Tabia	Kushet	Pop.	House-holds	Regular Public Transport from Tabia center to Wukro town	Easy accessibility of Kushet from Tabia center	# of respondents
Kelite	Adikisendid	A/Guangea	9921	2297	yes	no	4
		Metseke				no	4
	Agulae	Zone 1	5437	1258	yes	yes	4
		Zone 3				yes	4
	Awlaelo	Awlaelo	8218	1902	no	no	5
		Nalet				no	4
	Debretsion	D/mear	7636	1767	yes	no	5
		D/tsion				yes	5
	Genfel	Dengolo	6558	1518	Walking distance	yes	5
		Korir				yes	5
	Kihen	Kentefa	5318	1231	yes	no	5
		M/Adi				no	5
	May Quiha	D/berhan	7995	1851	yes	no	8
		M/Daero				no	4
	Negash	A/ekli	8770	2033	yes	no	5
		A/kasho				no	5

Source: Woreda Administration

Table A.2: Estimates by the Woreda (County) Administration About the Socioeconomic Status of the Selected Tabias

Tabia	Estimate
Adikisendid	"better off", "richest Tabia"
Agula	"poor"
Awlaelo	"medium"
Debretsion	"medium"
Genfel	"medium"
Kihen	"poorest Tabia"
May Quiha	"almost medium"
Negash	"rich"

Source: Woreda Administration

Table A.3: Distance from Wukro Town to Selected Tabias in Kilometers

Tabia	Distance Tabia center to Wukro town in km
Adikisendid	1,4
Agula	12
Awlaelo	22
Debretsion	23
Genfel	Direct proximity
Kihen	19,5
May Quiha	23
Negash	11

Source: Woreda Administration

Appendix B: Sample selection

Due to the lack of full census information the sampling was done in several steps. The research area, "Kilite Awaelo", is divided into 18 so called Tabias and its regional capital Wukro. Out of the 18 Tabias of Kilite Awlaelo 8 were randomly selected. These were Agulae, Awaelo, Debreberhan, Debretsiion, Genfel, Kihen, May Quiha and Negash. Due to the inaccessibility of Debreberhan Tabia during the rainy season it had to be replaced. Adikisendid Tabia was randomly selected as replacement. The list of Tabias in Kilite Awlaelo was taken from a list acquired form the Productive Safety Net Program, a joint program by the Ethiopian government and various donor organizations like USAID that is very prominent in the area. All Tabias but Agulae are of rural nature, where inhabitants mainly work in subsistence agriculture. To increase variety in the sample Wukro Town was later added to the list.

Each Tabia is divided into so called Kushets. These could be understood as communities of villages. There are 3 to 5 Kushets (called Zones in Agula Tabia) in each Tabia (on average 3,6). We randomly selected two Kushets in each Tabia. First the information was taken from the same PSNP list that was also used for the Tabias, but when mistakes in the list were noticed, we resorted to the official Kushet list, provided by the administration of Kilite Awaelo. Wukro Town is divided into 3 so called Kebelles out of which 2 were randomly selected.

Due to the lack of census information for the entire District we went directly to the Tabia/Kushet administration to aquire household lists. For all but one Kushet a recent full household list was available. The Kushet for which no such information existed was replaced by another Kushet in the Tabia. Depending on the form, which the list was in and on its state, various sampling methodologies were used. For the Kushets in which the households were listed in a master file the total amount of households was divided by the number of respondents to get equal intervals. Then a random person, usually either from the Tabia administration or a present inhabitant of the Tabia was asked for a random number between 1 and the total number of households. From this number we began the first interval. The person selected was the first respondent. After another interval we got the second respondent and so on. For replacement lists

the same methodology was applied. One of the Kushets in which this methodology was applied was A/kasho in Negash Tabia. There are 287 households in the Kushet. We interviewed 5 people in A/kasho. 287 was therefore divided by 5, giving an interval of 57. The Tabia manager was asked for a random number between 1 and 287. To this random number 57 was added, giving us the first respondent and so on. This methodology was applied in 10 out of 16 Kushets and in one Kebelle of Wukro Town. In 4 Kushets the list was in form of a pile that contained one sheet per household. In these Kushets we asked everybody who was present, which usually included the Tabia administration, Kushet leaders and inhabitants of the Tabia taking advantage of a service in the Tabia administration to blindly select sheets from the pile. This methodology was then also applied for the replacement lists. The remaining two Kushets were special cases. In one, Awaelo Kushet of Awaelo Tabia, the list was in different forms on different pieces of paper and seemingly had no order at all. We asked the present village leaders to randomly select one piece of paper. We then counted the number of households on that piece of paper and then asked another village leader to name a random number between one and the number of households on that list. Another exception was Naelet Kushet of Awaelo Tabia, which was not accessible to us due to the bad condition of the roads during rainy season. Instead we instructed the Tabia manager in the sampling. He had a university degree and was familiar with randomization and sampling. He randomly selected one respondent from each subdivision in the Kushet we wanted to interview in. We were able to verify his sampling and it was flawless. The last exception to the above described main sampling methodology was Agazi Kebelle of Wukro Town. The list was divided into 4 zones out of which we randomly selected one respondent per zone.

Once the households were selected we asked the Tabia managers to inform the respondents and gather them in a central location that was both accessible to the respondents and to us. We informed the Tabia managers that we only wanted to interview the household heads, if not possible their spouses. As mentioned above in only 8 out 85 cases, the household head's spouse was interviewed.

Since the period of the survey coincided with farming season, a very important time period in Ethiopia, some households were unavailable and had to be

replaced. 62 out of 85 households were from the main sampling list, the remaining 23 came from replacement lists. Therefore about 73% of the respondents were from the main sample list. Generally the first respondent of the main list was replaced by the first respondent of the replacement list, the second respondent of the main list by the second respondent of the replacement list and so forth. Since the geographic and meteorological circumstances didn't always allow us to visit the respondents personally we had to rely on the Tabia managers for finding the main respondents and properly replacing. There were replacement errors in 3 of the 16 Kushets.

Appendix C: Variable Descriptions

Table A.4: Description of Dependent Variables

Name	Label	Coding	Creation	Comments
saving	Respondent Has Savings	<ul style="list-style-type: none"> - 0 if respondent doesn't currently save or hasn't saved in the year prior to the study - 1 if respondent currently saves or has in the year prior to the study 	Based on Savings, Block A: Savings Habits, Question 1 (Current Savings) and Question 4 (Savings 12 Months Prior to Study)	
ln_total_hh_sav	Log of Total Household Savings	<p>Continuous variable measured in the Ethiopian currency "Birr." Can also take negative values if household is in debt</p> <ul style="list-style-type: none"> • Current balance at home based on "savings, block b" question 5, column 10 • Current balance with third person from question 5, column 11 • Value of in-kind savings question 5, column 13 • Current investment value in business, question 5, column 14 	<p>Accumulation of current balances in all savings accounts minus loans</p> <ul style="list-style-type: none"> • Current balance at home based on "savings, block b" question 5, column 10 • Current balance with third person from question 5, column 11 • Value of in-kind savings question 5, column 13 • Current investment value in business, question 5, column 14 	<ul style="list-style-type: none"> • Edirs not calculable since some respondents have been member for over 30 years. Furthermore they don't really have an account there, there is no current balance. It is quite possible that they will never enjoy any benefit from the Edir, therefore calculated as 0. • Missing treated as "0"

- Current balance in formal accounts, "savings, block c", question 7 unless "don't know"
- Current balance in Equb and VSLA taken from "savings, block e" question 6 and 7
- Current loans with formal institutions, question 5, column 15
- Current loans with semi-formal institutions, question 5, column 16
- Current loan from informal source, question 5, column 17

Table A.5: Description of Independent Variables

Name	Label	Coding	Creation	Comments
ln_hh_yrly_inc_withfood	Log of Yearly Household Income Including Food Transfers	Continuous variable in the Ethiopian currency "Birr"	<ul style="list-style-type: none">• Income, Block A: Economic Activities: Income for each member of the household and each job• Income, Block B: Remittances and Transfers: All cash and food transfers received by the household	Missings treated as "0" unless "Don't know"
ppi_score_num	Socioeconomic Status	Contiuous variable. Possible from 0 to 100, whereas 100 signifies the highest and 0 the lowest possible socioeconomic status	Index used: Progress out of Poverty Index by the Grameen Foundation, designed especially for Ethiopia	
gender_hh_head	Male Household Head	<ul style="list-style-type: none">• 0 if female-headed household• 1 if male-headed household	Observation recorded in comment section of questionnaire	
hh_size	Size of Household	Continuous variable on basis of number of people living in household	Based on questions 6 and 7 of demographic section	
depend_ratio	Ratio of Children in Household	[0;1]; continuous.	Number of children divided by the number of total household	

			members, based on questions 6 and 7 of demographic section
urban	Urban	<ul style="list-style-type: none"> • 0, if respondent lives in rural environment • 1, if respondent lives in urban environment 	Based on introductory section of questionnaire
schooling	Schooling	<ul style="list-style-type: none"> • 0, if respondent has received no schooling at all • 1, if respondent has received at least some schooling 	Based on question 3 of demographic section
ln_inc_earner_ratio	Log of Ratio of Income Earners in Household	<p>Specifies the ratio of people in the household who contribute to household income.</p> <p>Continuous variable between 0 and 1.</p>	<p>Number of income earners divided by number of household members. Based on Income, Block A: Economic Activities and hh_size</p>

Eigenständigkeitserklärung

Hiermit erkläre ich, dass ich die Arbeit selbstständig und ohne Benutzung anderer als der angegebenen Quellen und Hilfsmittel angefertigt habe.

München, den 11.1.2013

Julian Koschorke